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A Survey Comparing the M2/3 Bradley Fighting Vehicle and the M113 Armored Personnel Carrier by Members of the NTC Operations Group and OPFOR

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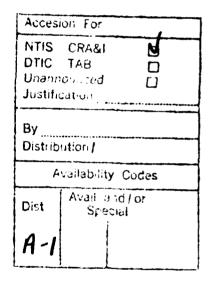# FOR THE BEHAVIORAL AND SOCIAL SCIENCES

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> A questionnaire was given to the National Training Center (NTC) Observer/ Controllers (O/C) and Opposing Force (OPFOR) to obtain their observations and opinions on the effectiveness of the M2/3 Bradley Fighting Vehicle in comparison to the M113 Armored Personnel Carrier. Results indicate respondents strongly favored the M2/3 when compared to the M113, and regarded the capability of the M2/3 as being essential to success on major battlefield tasks.

A Survey Comparing the M2/3 Bradley Fighting Vehicle and the M113 Armored Personnel Carrier by Members of the NTC Operations Group and OPFOR

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The Army Research Institute (ARI) has a major research program in support of the National Training Center (NTC). The purpose of this program is to support improved training at the NTC and development of Lessons Learned methodologies for training, doctrine, organization, personnel, and equipment.

This report was prepared in response to a request by the Combined Arms Training Activity (CATA) for assistance in analyzing the relative effectiveness of the Bradley Fighting Vehicle M2/3 and the Armored Personnel Carrier M113.

The research described in this report was conducted by ARI's Presidio of Monterey Field Unit, whose mission is to increase Army unit combat performance capabilities by improving unit performance measurement and evaluation methods, unit training programs and management tools, and the NTC and home station data base.

The Program Task that supports this mission is entitled "Field Feedback from National Training Center to Improve Collective and Individual Training" and is organized under the "Maintain Force Readiness" program area. This research was sponsored by CATA under the Letter of Agreement entitled "National Training Center (NTC) and Unit Home-Station Training and Feedback System," dated 16 September 1985. The CATA Lessons Learned Division was briefed in March 1986 on the information in this document and indicated its intention to use the results. The report was used to determine perceptions of effectiveness of the two weapon systems.

EDGAR M. JOHNSON
Technical Director

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A SURVEY COMPARING THE M2/3 BRADLEY FIGHTING VEHICLE AND THE M113 ARMORED
PERSONNEL CARRIER BY MEMBERS OF THE NTC OPERATIONS GROUP AND OPFOR

EXECUTIVE SUMMARY

Requirement:

    To estimate the effectiveness of the M113 Armored Personnel Carrier
and the M2/3 Bradley Fighting Vehicle, and their contributions to unit
effectiveness.

Procedure:

    A 40-item questionnaire was administered to the NTC Observer/Controllers
(O/C) and the OPFOR (total N = 113 to 211). The questionnaire was designed
to investigate characteristics of the respondents, compare the capabilities
of the M2/3 and M113 weapon systems, and to assess the contribution of each
weapon system to unit capability to execute critical battlefield tasks.

    Statistical tests were performed on the data to identify whether re-
sponses were statistically significant when comparing the M2/3 and M113.

Findings:

    The members of the NTC O/C and OPFOR strongly favored the M2/3 in com-
parison to the M113, and regarded the capability of the M2/3 as very impor-
tant/essential to battle success on major battlefield tasks.

Utilization of Findings:

    The Department of the Army can use the information to support a cost-
effectiveness analysis of the M2/3 Bradley Fighting Vehicle System.

A SURVEY COMPARING THE M2/3 BRADLEY FIGHTING VEHICLE AND THE M113 ARMORED
PERSONNEL CARRIER BY MEMBERS OF THE NTC OPERATIONS GROUP AND OPFOR

CONTENTS

A SURVEY COMPARING THE M2/3 BRADLEY FIGHTING VEHICLE
AND THE M113 ARMORED PERSONNEL CARRIER
BY MEMBERS OF THE NTC OPERATIONS GROUP AND OPFOR[1]

Introduction

The Observer/Controllers and the units simulating Warsaw Pact forces (OPFOR) at the National Training Center (NTC), Fort Irwin, CA are in a unique position to observe Task Forces equipped with M113 Armored Personnel Carriers and M2/3 Bradley Fighting Vehicles under performance conditions closely simulating those in combat. A questionnaire was administered to these two groups to determine their perceptions of the effectiveness of the two weapon systems based on their experience at the NTC.

Method

A 40-item questionnaire was administered to the NTC Observers/Controllers (O/C), and the OPFOR members (Appendix A). The questionnaire is divided into four parts.

Questions 1-6 pertain to information regarding respondents.

Part I is divided into two sections. Section 1 asks the respondent to compare the M2/3 and M113 on capabilities to detect and acquire enemy targets, move on the battlefield, and kill or suppress the enemy. Section 2 asks the respondent about the importance of this capability to battle success.

Part II asks the respondent about the importance of the agility and lethality of the vehicle to battle survivability.

Part III asks the respondent to compare the M2/3 and M113's potential to contribute to a unit's effectiveness by accomplishment of major battlefield tasks.

The data gathered were analyzed using the statistical analysis package, SAS, on the IBM 3033.[2] Frequencies, means, and standard deviations were calculated for each question.

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[1] LTC J. Crowley (Chief, NTC Observations Cell, Combined Arms Training Activity), Dr. Bob LeVine, Dr. Jim Hodges, and Dr. Wayne Gustafson (Arroyo Center) were responsible for the design and content of the survey instrument.

[2] Acknowledgment and appreciation to Judith J. Nichols (The BDM Corporation) for her support on the statistical analyses.

Results and Discussion

Characteristics of Respondents

As shown in Table 1, 75 percent of the respondents had more than three years of service. Furthermore, 75 percent of the respondents had observed more than five M113 rotations, and 74 percent observed two or more M2/3 rotations. For the OC's, 57 percent were from the engagement simulation team, and 69 percent of the OC's were at the platoon or company level. The majority of the OPFOR positions were vehicle commanders. (See Appendix B for frequency distribution.)

Table 1
Characteristics of Respondents

Question		%
1.	Years in Service	
	0-3	25%
	4-7	32%
	8-12	29%
	12+	14%
2.	Number of M113 Rotations Observed	
	0	2%
	1-4	23%
	5-10	27%
	10+	48%
3.	Number of M2/3 Rotations Observed	
	0	3%
	1	23%
	2	19%
	3	27%
	4	28%
4.	Current OC Team	
	Live Fire	37%
	Engagement Simulation	57%
	Other	6%
5.	Current OC Position	
	Platoon OC	43%
	Company OC	26%
	TF OC	6%
	S-3 OC	9%
	Other	17%
6.	Current OPFOR Position	
	Vehicle Cdr	57%
	Plt Sgt	14%
	Plt Ldr	13%
	Co Cdr/Bn Cdr/S-3	5%
	Other	11%

Note: The responses of individuals who indicated that they had not observed either a M113 rotation or M2/3 rotation were not included in the analysis.

An overall comparison of OC responses vs. OPFOR responses did not indicate any substantial differences among the responses by the two groups. Therefore, the results from the two groups were combined for the analyses presented below. (See Appendix C for the responses of the two groups by item.)

Part I

Each of the questions in Part I had two sections. Section 1 asked the respondent to compare the M2/3 and the M113 by circling the response, on the following scale, which most closely corresponded to his experience.

M2/3 Much Better	M2/3 Somewhat Better	No Difference	M113 Somewhat Better	M113 Much Better
A	B	C	D	E
(-2)	(-1)	(0)	(1)	(2)

Section 2 asked the respondent's opinion about the importance of that capability of the weapon system to battle success (win/lose) by circling the response, on the following scale, which most closely corresponded to his view.

Essential	Very Important	Important	Somewhat Important	Not Important
A	B	C	D	E
(-2)	(-1)	(0)	(1)	(2)

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Table 2 contains the questions for the paired items, with the odd numbers corresponding to Section 1 and the even numbers to Section 2.

Table 2
Questionnaire Items for Part I

Item	Question
7 & 8	Detect and acquire enemy armored vehicles during the day while the M2/M113 is moving.
9 & 10	Detect and acquire enemy armored vehicles at night while the M2/M113 moving.
11 & 12	Detect and acquire enemy armored vehicles during the day while the M2/3-M113 is stationary.
13 & 14	Detect and acquire enemy armored vehicles at night while the M2/M113 is stationary.
15 & 16	Detect and acquire enemy dismounted infantry during day while M2/M113 is moving or stationary.
17 & 18	Detect and acquire enemy dismounted infantry during night while M2/M113 is moving or stationary.
19 & 20	Move over restricted, steep terrain.
21 & 22	Move rapidly, and evasively over the battlefield.
23 & 24	Kill or suppress enemy armored vehicles.
25 & 26	Kill or suppress enemy dismounted infantry.
27 & 28	Speed/ease of operator's maintenance on vehicle.

Table 3 contains the mean response to each item. For each question, on Section 1, the mean response strongly favored the M2/3, falling between "Somewhat Better" and "Much Better" when compared to the M113, with the exception of detection/acquisition of dismounted enemy during the day (Q15) and speed/ease of operator maintenance (Q27). For Section 2, regarding the importance of the capability of that weapon system to battle success, mean responses were between "Very Important" and "Essential."

Table 3
Means and Standard Deviations For Part I, Sections 1 and 2

Sect 1 Item	Mean	SD	N	Sect 2 Item	Mean	SD	N
7	-1.16	1.11	202	8	-1.30	0.94	203
9	-1.33	1.05	184	10	-1.37	0.96	194
11	-1.02	1.11	205	12	-1.25	0.99	206
13	-1.35	1.07	189	14	-1.38	0.99	195
15	-0.80	1.15	181	16	-1.14	0.98	192
17	-1.26	1.02	170	18	-1.33	0.91	184
19	-1.03	1.20	201	20	-1.14	0.95	204
21	-1.55	0.95	208	22	-1.51	0.85	207
23	-1.66	0.75	207	24	-1.57	0.80	207
25	-1.33	1.06	184	26	-1.37	0.90	191
27	-0.20	1.61	113	28	-0.97	1.08	142

Tables 4 and 5 display for each item, the percentage of responses for each category on the scale. The greater percentage of respondents favored the M2/3 to the M113.

Table 4
Response Percentages of Each Item for Part I, Section 1

Item	M2/3 Much Better	M2/3 Somewhat Better	No Difference	M113 Somewhat Better	M113 Much Better
7	52	26	12	5	5
9	63	19	9	7	2
11	44	27	18	6	4
13	66	15	12	4	4
15	35	27	25	7	5
17	58	19	16	5	2
19	49	23	14	8	6
21	75	13	4	5	2
23	78	14	5	2	1
25	64	17	11	6	3
27	36	11	12	20	21

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Table 5
Response Percentages of Each Item for Part I, Section 2

Item	Essential	Very Important	Important	Somewhat Important	Not Important
8	55	26	14	3	2
10	60	26	9	2	3
12	54	24	16	4	2
14	63	22	9	3	3
16	46	29	19	4	2
18	57	23	16	3	1
20	42	38	15	2	3
22	69	19	9	2	1
24	71	20	6	1	1
26	60	22	15	2	2
28	41	30	18	10	2

Part II

The instructions provided in Part II asked the respondents to judge the importance of the vehicle characteristics to vehicle battle survivability (capability to avoid getting killed). The scale used was the same as in Part I, Section 2. The questions are contained in Table 6.

Table 6
Questionnaire Items for Part II

Item	Question
29	Agility (speed of movement, ability to turn)
30	Lethality (ability to destroy opposing vehicles)

The respondents, on the average, indicated that vehicle characteristics regarding agility and lethality are "Very Important" to "Essential" for vehicle battle survivability. Results are summarized in Table 7.

Table 7
Means and Standard Deviations For Part II

Item	Mean	SD	N
29	-1.65	0.66	206
30	-1.66	0.78	208

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Table 8 displays the percentage of responses, for each category on the scale, pertaining to agility and lethality.

Table 8
Response Percentages of Each Item for Part II

Item	Essential	Very Important	Important	Somewhat Important	Not Important
29	73	19	6	2	--
30	80	12	5	2	1

Part III

The instructions for Part III asked the respondent to compare, based on his experience, the M2/3 and M113's potential to contribute to a unit's effectiveness to accomplish the tasks identified. To avoid confusion with a previous question, this statement was included: "NOTE that this is different from the earlier question which asked about vehicle--not unit--performance."

The scale used was the same as that in Part I, Section 1. The questions are contained in Table 9.

Table 9
Questionnaire Items for Part III

Item	Question
31	Disengage - break contact with the enemy and move to a covered and concealed location.
32	Overwatch - observe the movement of another element and support it with fires.
33	Detect and destroy OPFOR mounted reconnaissance.
34	Detect and destroy OPFOR dismounted reconnaissance.
35	Assault a defending enemy position.
36	Move and operate in limited visibility/obscured conditions.
37	React upon making contact with the enemy.
38	Defend a battle position.
39	Conduct a movement to contact.
40	Conduct a night attack.

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The respondents indicated that on each major battlefield task, the potential contribution to a unit's effectiveness was "Somewhat Better" to "Much Better" for the M2/3 than for the M113 (Table 10).

Table 10
Means and Standard Deviations For Part III

Item	Mean	SD	N
31	-1.02	1.14	201
32	-1.48	0.91	199
33	-1.40	0.93	188
34	-1.06	1.14	173
35	-1.27	0.89	205
36	-1.14	1.05	192
37	-1.07	1.05	204
38	-1.30	0.97	204
39	-1.20	0.97	190
40	-1.55	0.65	168

Table 11 displays for each item the percentage of responses for each category on the scale. The greater percentage of respondents favored the M2/3 to the M113.

Table 11
Response Percentages of Each Item for Part III

Item	M2/3 Much Better	M2/3 Somewhat Better	No Difference	M113 Somewhat Better	M113 Much Better
31	46	26	15	9	4
32	68	18	8	5	1
33	64	19	12	3	1
34	49	23	19	5	5
35	50	33	12	4	1
36	51	22	19	6	2
37	47	21	27	2	3
38	55	28	12	2	3
39	48	33	13	4	2
40	60	26	9	2	3

Conclusion

The members of the NTC Observer/Controllers and OPFOR reported that, in their experience, the M2/3 was superior to the M113 on all "Very Important" to "Essential" weapons systems capabilities.

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The purpose of this survey is to compare the performance of the M2/3 and the M-113 Weapon Systems as they contribute to force effectiveness. Because of your assignment at the National Training Center, you are in a unique position to provide information on your observations of rotations. Remember you are comparing the difference between the systems. If you have had no experience with the indicated type of mission/time of day, response with "not observed/no opinion."

For this survey, do not consider the dismounted squad as a part of either system. (M-113 system is carrier, 50 caliber MG, driver and TC; M2/M3 system is vehicle, TOW, 25mm, 7.62mm, MG, TC, Gunner, and driver).

This survey is divided into:

Part I - Asks you to compare capabilities of the M2/3 and the M-113 Weapons System and asks your opinion about the importance of each capability for battle effectiveness.

Part II - Asks your opinion of two capabilities in terms of their contribution to vehicle survivability.

Part III - Ask you to compare the M2/3's and M-113's potential to contribute to unit effectiveness.

Enter your responses on the Mark Sense Form by filling in the appropriate space with a Number 2 pencil and by circling the correct answer on this sheet. Only the requested information need be supplied.

Grade. Enter your grade in the area provided at the top right of the form and this sheet.

Enter the remaining information in the items on the main body of the form.

Item

1. Years in Service: 0-3 (A)   4-7 (B)   8-12 (C)   12+ (D)

2. Approximately number of M-113 rotations observed:

   0 (A)   1-4 (B)   5-10 (C)   10+ (D)

3. Number of M2/3 rotations observed:

   0 (A)   1 (B)   2 (C)   3 (D)   4 (E)

4. Current team, if OC: Live Fire (A) Engagement Simulation (B) Other (C)

5. Current position, if OC:

   Platoon CC (A)   Company OC (B)   TF OC (C)   S-3 OC (D)   Other (E)

6. Current position, if OPFOR:

   Vehicle Cdr (A)   Plt Sgt (B)   Plt Ldr (C)   Co Cdr/Bn Cdr/S-3 (D)

   Other (E)

PART I

Each of the following questions has two parts. The first part asks you to compare the M2/3 and the M-113 Weapon Systems by circling the response which most closely corresponds to your experience.

M2/3 Much Better	M2/3 Somewhat Better	No Difference	M-113 Somewhat Better	M-113 Much Better	Not Observed/ No Opinion
A	B	C	D	E	F

The second part asks your opinion about the importance of that capability to battle success (win/lose) by circling the response which most closely corresponds to your view.

Essential	Very Important	Important	Somewhat Important	Not Important	Not Observed/ No Opinion
A	B	C	D	E	F

Detect and acquire enemy armored vehicles during the day while the M2/M-113 is moving:

7. Which is better:	A	B	C	D	E	F
8. How important:	A	B	C	D	E	F

Detect and acquire enemy armored vehicles at night while the M2/M-113 is moving:

9. Which is better:	A	B	C	D	E	F
10. How important:	A	B	C	D	E	F

Detect and acquire enemy armored vehicles during the day while the M2/M-113 is stationary:

11. Which is better:	A	B	C	D	E	F
12. How important:	A	B	C	D	E	F

Detect and acquire enemy armored vehicles at night while the M2/M-113 is stationary:

13. Which is better:	A	B	C	D	E	F
14. How important:	A	B	C	D	E	F

10

Each of the following questions has two parts. The first part asks you to compare the M2/3 and the M-113 Weapon Systems by circling the response which most closely corresponds to your experience.

M2/3 Much Better	M2/3 Somewhat Better	No Difference	M-113 Somewhat Better	M-113 Much Better	Not Observed/ No Opinion
A	B	C	D	E	F

The second part asks your opinion about the importance of that capability to battle success (win/lose) by circling the response which most closely corresponds to your view.

Essential	Very Important	Important	Somewhat Important	Not Important	Not Observed/ No Opinion
A	B	C	D	E	F

Detect and acquire enemy dismounted infantry during day while M2/M-113 is moving or stationary:

| 15. | Which is better: | A | B | C | D | E | F |
| 16. | How important: | A | B | C | D | E | F |

Detect and acquire enemy dismounted infantry during night while M2/M-113 is moving or stationary:

| 17. | Which is better: | A | B | C | D | E | F |
| 18. | How important: | A | B | C | D | E | F |

Move over restricted, steep terrain:

| 19. | Which is better: | A | B | C | D | E | F |
| 20. | How important: | A | B | C | D | E | F |

Move rapidly, and evasively over the battlefield:

| 21. | Which is better: | A | B | C | D | E | F |
| 22. | How important: | A | B | C | D | E | F |

Kill or suppress enemy armored vehicles:

| 23. | Which is better: | A | B | C | D | E | F |
| 24. | How important: | A | B | C | D | E | F |

Kill or suppress enemy dismounted infantry:

| 25. | Which is better: | A | B | C | D | E | F |
| 26. | How important: | A | B | C | D | E | F |

Speed/ease of operator's maintenance on vehicle:

| 27. | Which is better: | A | B | C | D | E | F |
| 28. | How important: | A | B | C | D | E | F |

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PART II

For the following questions, provide your opinion on the importance of the vehicle characteristic to vehicle battle-survivability-(capability to avoid getting killed).

Essential	Very Important	Important	Somewhat Important	Not Important	Not Observed/ No Opinion
A	B	C	D	E	F

29. Agility (speed of movement, ability to turn):

A   B   C   D   E   F

30. Lethality (ability to destroy opposing vehicles):

A   B   C   D   E   F

PART III

Compare the M2/3 and M-113's potential to contribute to a unit's
effectiveness to accomplish the tasks shown below. NOTE that this is
different from the earlier question which asked about vehicle - not unit -
performance. Circle the response which most closely corresponds to your
experience.

M2/3 Much Better	M2/3 Somewhat Better	No Difference	M-113 Somewhat Better	M-113 Much Better	Not Observed/ No Opinion
A	B	C	D	E	F

31. Disengage - break contact with the enemy and move to a covered and
concealed location.

                    A   B   C   D   E   F

32. Overwatch - observe the movement of another element and support it
with fires.

                    A   B   C   D   E   F

33. Detect and destroy OPFOR mounted reconnaissance.

                    A   B   C   D   E   F

34. Detect and destroy OPFOR dismounted reconnaissance.

                    A   B   C   D   E   F

35. Assault a defending enemy position.

                    A   B   C   D   E   F

36. Move and operate in limited visibility/obscured conditions.

                    A   B   C   D   E   F

37. React upon making contact with the enemy.

                    A   B   C   D   E   F

38. Defend a battle position.

                    A   B   C   D   E   F

13

Compare the M2/3 and M-113's potential to contribute to a unit's
effectiveness to accomplish the tasks shown below. NOTE that this is
different from the earlier question which asked about vehicle - not -
performance. Circle the response which most closely corresponds to your
experience.

M2/3 Much Better	M2/3 Somewhat Better	No Difference	M-113 Somewhat Better	M-113 Much Better	Not Observed/ No Opinion
A	B	C	D	E	F

39. <u>Conduct</u> a movement to contact.

    A   B   C   D   E   F

40. <u>Conduct</u> a night attack.

    A   B   C   D   E   F

41. Remarks:

MEANS AND STANDARD DEVIATIONS

Q1	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	4	.	.	.
1	52	52	25.121	25.121
2	66	118	31.884	57.005
3	61	179	29.469	86.473
4	28	207	13.527	100.000

Q2	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	3	.	.	.
1	5	5	2.404	2.404
2	47	52	22.596	25.000
3	56	108	26.923	51.923
4	100	208	48.077	100.000

Q3	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	4	.	.	.
1	5	6	2.899	2.899
2	47	53	22.705	25.604
3	40	93	19.324	44.928
4	56	149	27.053	71.981
5	58	207	28.019	100.000

Q4	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	157	.	.	.
1	20	20	37.037	37.037
2	31	51	57.407	94.444
3	3	54	5.556	100.000

Q5	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	164	.	.	.
1	20	20	42.553	42.553
2	12	32	25.532	68.085
3	3	35	6.383	74.468
4	4	39	8.511	82.979
5	8	47	17.021	100.000

Q6	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
-.	43	.	.	.
-2	95	95	56.548	56.548
-1	24	119	14.286	70.833
0	22	141	13.095	83.929
1	8	149	4.762	88.690
2	19	168	11.310	100.000

Q7	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	9	.	.	.
-2	105	105	51.980	51.980
-1	53	158	26.238	78.218
0	25	183	12.376	90.594
1	10	193	4.950	95.545
2	9	202	4.455	100.000

Q8	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
-.	8	.	.	.
-2	112	112	55.172	55.172
-1	52	164	25.616	80.788
0	29	193	14.286	95.074
1	7	200	3.448	98.522
2	3	203	1.478	100.000

MEANS AND STANDARD DEVIATIONS

Q1	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	4			
1	52	52	25.121	25.121
2	66	118	31.884	57.005
3	61	179	29.469	86.473
4	28	207	13.527	100.000

Q2	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	3			
1	5	5	2.404	2.404
2	47	52	22.596	25.000
3	56	108	26.923	51.923
4	100	208	48.077	100.000

Q3	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	4			
1	5	6	2.899	2.899
2	47	53	22.705	25.604
3	40	93	19.324	44.928
4	56	149	27.053	71.981
5	58	207	28.019	100.000

Q4	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	157			
1	20	20	37.037	37.037
2	31	51	57.407	94.444
3	3	54	5.556	100.000

Q5	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	164			
1	20	20	42.553	42.553
2	12	32	25.532	68.085
3	3	35	6.383	74.468
4	4	39	8.511	82.979
5	8	47	17.021	100.000

Q6	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	43			
-2	95	95	56.548	56.548
-1	24	119	14.286	70.833
0	22	141	13.095	83.929
1	8	149	4.762	88.690
2	19	168	11.310	100.000

Q7	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	9			
-2	105	105	51.980	51.980
-1	53	158	26.238	78.218
0	25	183	12.376	90.594
1	10	193	4.950	95.545
2	9	202	4.455	100.000

Q8	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	6			
-2	112	112	55.172	55.172
-1	52	164	25.616	80.788
0	29	193	14.286	95.074
1	7	200	3.448	98.522
2	3	203	1.478	100.000

MEANS AND STANDARD DEVIATIONS

Q9	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	27	.	.	.
-2	115	115	62.500	62.500
-1	35	150	19.022	31.522
0	17	167	9.239	90.761
1	13	180	7.065	97.826
2	4	184	2.174	100.000

Q10	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	17	.	.	.
-2	116	116	59.794	59.794
-1	50	160	25.773	85.567
0	18	184	9.278	94.845
1	4	188	2.062	96.907
2	6	194	3.093	100.000

Q11	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	6	.	.	.
-2	91	91	44.390	44.390
-1	56	147	27.317	71.707
0	37	184	18.049	89.756
1	13	197	6.341	96.098
2	8	205	3.902	100.000

Q12	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	5	.	.	.
-2	112	112	54.369	54.369
-1	49	161	23.786	78.155
0	33	194	16.019	94.175
1	3	202	3.883	98.058
2	4	206	1.942	100.000

Q13	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	22	.	.	.
-2	124	124	65.608	65.608
-1	28	152	14.815	80.423
0	23	175	12.169	92.593
1	7	182	3.704	95.296
2	7	189	3.704	100.000

Q14	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	16	.	.	.
-2	122	122	62.564	62.564
-1	43	165	22.051	84.615
0	18	183	9.231	93.846
1	6	189	3.077	96.923
2	6	195	3.077	100.000

Q15	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	30	.	.	.
-2	64	64	35.359	35.359
-1	49	113	27.072	62.431
0	46	159	25.414	87.845
1	13	172	7.182	95.028
2	9	181	4.972	100.000

Q16	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	19	.	.	.
-2	89	89	46.354	46.354
-1	56	145	29.167	75.521
0	36	181	18.750	94.271
1	7	188	3.646	97.917
2	4	192	2.083	100.000

MEANS AND STANDARD DEVIATIONS

Q17	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	41	.	.	.
-2	99	99	58.235	58.235
-1	32	131	18.824	77.059
0	27	158	15.882	92.941
1	9	167	5.294	98.235
2	3	170	1.765	100.000

Q18	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	27	.	.	.
-2	105	105	57.065	57.065
-1	43	148	23.370	80.435
0	29	177	15.761	96.196
1	5	182	2.717	98.913
2	2	184	1.087	100.000

Q19	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	10	.	.	.
-2	99	99	49.254	49.254
-1	47	146	23.383	72.637
0	29	175	14.428	87.065
1	15	190	7.463	94.527
2	11	201	5.473	100.000

Q20	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	7	.	.	.
-2	85	85	41.667	41.667
-1	78	163	38.235	79.902
0	31	194	15.196	95.098
1	4	198	1.961	97.059
2	6	204	2.941	100.000

Q21	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	2	.	.	.
-2	157	157	75.481	75.481
-1	28	185	13.462	88.942
0	8	193	3.846	92.788
1	10	203	4.808	97.596
2	5	208	2.404	100.000

Q22	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	4	.	.	.
-2	142	142	68.599	68.599
-1	39	181	18.841	87.440
0	19	200	9.179	96.618
1	4	204	1.932	98.551
2	3	207	1.449	100.000

Q23	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	4	.	.	.
-2	161	161	77.778	77.778
-1	29	190	14.010	91.787
0	11	201	5.314	97.101
1	4	205	1.932	99.034
2	2	207	0.966	100.000

Q24	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	4	.	.	.
-2	147	147	71.014	71.014
-1	41	188	19.807	90.821
0	13	201	6.280	97.101
1	3	204	1.449	99.551
2	3	207	1.449	100.000

MEANS AND STANDARD DEVIATIONS

Q25	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	27	.	.	.
-2	117	117	63.587	63.587
-1	31	148	16.848	80.435
0	20	168	10.870	91.304
1	11	179	5.978	97.283
2	5	194	2.717	100.000

Q26	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	20	.	.	.
-2	114	114	59.686	59.686
-1	42	156	21.990	81.675
0	29	185	15.183	96.859
1	3	188	1.571	98.429
2	3	191	1.571	100.000

Q27	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	98	.	.	.
-2	41	41	36.283	36.283
-1	12	53	10.619	46.903
0	13	66	11.504	58.407
1	23	89	20.354	78.761
2	24	113	21.239	100.000

Q28	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	69	.	.	.
-2	58	58	40.345	40.345
-1	42	100	29.577	70.423
0	25	125	17.606	88.028
1	14	139	9.859	97.887
2	3	142	2.113	100.000

Q29	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	5	.	.	.
-2	151	151	73.301	73.301
-1	40	191	19.417	92.718
0	12	203	5.825	98.544
1	3	206	1.456	100.000

Q30	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	3	.	.	.
-2	166	166	79.808	79.808
-1	25	191	12.019	91.827
0	10	201	4.808	96.635
1	4	205	1.923	98.558
2	3	208	1.442	100.000

Q31	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	10	.	.	.
-2	93	93	46.269	46.269
-1	52	145	25.871	72.139
0	30	175	14.925	87.065
1	19	194	9.453	96.517
2	7	201	3.483	100.000

Q32	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	12	.	.	.
-2	136	136	68.342	68.342
-1	36	172	18.090	86.432
0	15	187	7.538	93.970
1	10	197	5.025	98.995
2	2	199	1.005	100.000

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Q33	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	23	.	.	.
-2	120	120	63.830	63.830
-1	36	156	19.149	82.979
0	23	179	12.234	95.213
1	6	185	3.191	98.404
2	3	188	1.596	100.000

Q34	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	38	.	.	.
-2	85	85	49.133	49.133
-1	39	124	22.543	71.676
0	32	156	18.497	90.173
1	9	165	5.202	95.376
2	8	173	4.624	100.000

Q35	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	6	.	.	.
-2	103	103	50.244	50.244
-1	67	170	32.683	82.927
0	25	195	12.195	95.122
1	8	203	3.902	99.024
2	2	205	0.976	100.000

Q36	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	19	.	.	.
-2	98	98	51.042	51.042
-1	42	140	21.875	72.917
0	37	177	19.271	92.187
1	11	188	5.729	97.917
2	4	192	2.083	100.000

Q37	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	7	.	.	.
-2	96	96	47.059	47.059
-1	43	139	21.078	68.137
0	54	193	26.471	94.608
1	5	198	2.451	97.059
2	6	204	2.941	100.000

Q38	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	7	.	.	.
-2	112	112	54.902	54.902
-1	57	169	27.941	82.843
0	24	193	11.765	94.608
1	5	198	2.451	97.059
2	6	204	2.941	100.000

Q39	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	21	.	.	.
-2	91	91	47.895	47.895
-1	62	153	32.632	80.526
0	25	178	13.158	93.684
1	8	186	4.211	97.895
2	4	190	2.105	100.000

Q40	FREQUENCY	CUM FREQ	PERCENT	CUM PERCENT
.	44	.	.	.
-2	102	102	60.714	60.714
-1	41	143	24.404	85.118
0	15	158	8.928	94.046
1	4	162	2.380	96.426
2	6	168	3.571	99.997

Comparison of Mean Responses of OC and OPFOR by Item

Note: Position 1 = OC
       Position 2 = OPFOR

VARIABLE: Q1

POSITION	N	MEAN	STD DEV
1	53	2.66037736	1.01798058
2	149	2.19463087	0.95632922

VARIABLE: Q2

POSITION	N	MEAN	STD DEV
1	54	3.37037037	0.80789258
2	149	3.14765101	0.89575454

VARIABLE: Q3

POSITION	N	MEAN	STD DEV
1	54	3.51851852	1.22460222
2	147	3.56462585	1.21106784

VARIABLE: Q4

POSITION	N	MEAN	STD DEV
1	54	1.68518519	0.57704760
2	0	•	•

VARIABLE: Q5

POSITION	N	MEAN	STD DEV
1	44	2.25000000	1.51158318
2	3	3.33333333	1.52752523

VARIABLE: Q6

POSITION	N	MEAN	STD DEV
1	19	0.10526316	1.91179778
2	149	-1.14093960	1.24129474

VARIABLE: Q7

POSITION	N	MEAN	STD DEV
1	53	-1.22641509	1.18713471
2	141	-1.12765957	1.08792768

VARIABLE: Q8

POSITION	N	MEAN	STD DEV
1	22	-1.46153846	0.89577564
2	143	-1.21676322	0.96516699

VARIABLE: Q9

POSITION	N	MEAN	STD DEV
1	47	-1.55319149	1.03857157
2	129	-1.25581395	1.01754948

VARIABLE: Q10

POSITION	N	MEAN	STD DEV
1	49	-1.65306122	0.66304287
2	137	-1.28467153	1.00695307

VARIABLE: Q11

POSITION	N	MEAN	STD DEV
1	54	-1.22222222	1.11027222
2	143	-0.95104895	1.12167299

VARIABLE: Q12

POSITION	N	MEAN	STD DEV
1	54	-1.48148148	0.86309537
2	144	-1.16666667	1.02418311

VARIABLE: Q13

POSITION	N	MEAN	STD DEV
1	48	-1.62500000	0.86602540
2	133	-1.27067669	1.10184294

VARIABLE: Q14

POSITION	N	MEAN	STD DEV
1	49	-1.67346939	0.77426726
2	138	-1.29710145	0.99933862

VARIABLE: Q15

POSITION	N	MEAN	STD DEV
1	50	-0.88000000	1.11330776
2	123	-0.81300813	1.14759615

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VARIABLE: Q16

POSITION          N          MEAN          STD DEV

     1           52      -1.28846154     0.99678972
     2          132      -1.08333333     0.98880502

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VARIABLE: Q17

POSITION          N          MEAN          STD DEV

     1           48      -1.54166667     0.79782506
     2          114      -1.19298246     1.05492686

FOR HO: VARIANCES ARE EQUAL, F'=     1.75 WITH 1
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VARIABLE: Q18

POSITION          N          MEAN          STD DEV

     1           50      -1.58000000     0.73094850
     2          126      -1.23809524     0.96086011

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VARIABLE: Q19

POSITION          N          MEAN          STD DEV

     1           52      -1.34615385     0.92640175
     2          141      -0.92198582     1.26531149

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VARIABLE: Q20

POSITION          N          MEAN          STD DEV

     1           52      -1.15384615     0.82568131
     2          144      -1.11111111     1.00426441

------------------------------------------------

VARIABLE: Q21

POSITION          N          MEAN          STD DEV

     1           54      -1.70370370     0.74300841
     2          146      -1.48630137     1.03214742

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VARIABLE: Q22

POSITION          N          MEAN          STD DEV

     1           54      -1.57407407     0.76729989
     2          145      -1.46896552     0.89795425
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VARIABLE: Q23

POSITION	N	MEAN	STD DEV
1	54	-1.77777778	0.63444127
2	145	-1.60689655	0.80187759

VARIABLE: Q24

POSITION	N	MEAN	STD DEV
1	54	-1.64814815	0.67732569
2	145	-1.53793103	0.85000563

VARIABLE: Q25

POSITION	N	MEAN	STD DEV
1	51	-1.37254902	1.07630450
2	126	-1.33333333	1.03537433

VARIABLE: Q26

POSITION	N	MEAN	STD DEV
1	52	-1.48076923	0.75382384
2	132	-1.31818182	0.96755126

VARIABLE: Q27

POSITION	N	MEAN	STD DEV
1	42	0.11904762	1.51741727
2	67	-0.41791045	1.64362177

VARIABLE: Q28

POSITION	N	MEAN	STD DEV
1	47	-0.89361702	1.08815845
2	89	-0.98876404	1.10262478

VARIABLE: Q29

POSITION	N	MEAN	STD DEV
1	53	-1.64150943	0.62309215
2	145	-1.62758621	0.68662649

VARIABLE: Q30

POSITION	N	MEAN	STD DEV
1	54	-1.72222222	0.62696233
2	146	-1.65068493	0.81866242

VARIABLE: Q31

POSITION	N	MEAN	STD DEV
1	51	-1.17647059	1.09006206
2	143	-0.96503497	1.16529986

VARIABLE: Q32

POSITION	N	MEAN	STD DEV
1	54	-1.64814815	0.64887151
2	137	-1.45255474	0.95463885

VARIABLE: Q33

POSITION	N	MEAN	STD DEV
1	51	-1.52941176	0.80877540
2	130	-1.38461538	0.97555085

VARIABLE: Q34

POSITION	N	MEAN	STD DEV
1	50	-1.12000000	1.15422914
2	116	-1.07758621	1.15080964

VARIABLE: Q35

POSITION	N	MEAN	STD DEV
1	54	-1.38888889	0.83364774
2	144	-1.22916667	0.92152769

VARIABLE: Q36

POSITION	N	MEAN	STD DEV
1	52	-1.44230769	0.82636605
2	134	-1.01492537	1.11709259

VARIABLE: Q37

POSITION	N	MEAN	STD DEV
1	54	-1.22222222	0.94503003
2	144	-1.01388889	1.09023710

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VARIABLE: Q33

POSITION	N	MEAN	STD DEV
1	54	-1.38888889	0.85598154
2	143	-1.25174925	1.01723549

VARIABLE: Q39

POSITION	N	MEAN	STD DEV
1	52	-1.48076923	0.72734771
2	130	-1.10769231	1.02863011

VARIABLE: Q40

POSITION	N	MEAN
1	38	-1.6052631
2	130	-1.5384615